

Commentary

Increasing prevalence of lifestyle diseases: high time for action

Cardiovascular diseases (CVD) continue to be the major cause of mortality representing about 30 per cent of all deaths worldwide. Lifestyle diseases like hypertension, diabetes mellitus, dyslipidaemia and overweight/obesity are the major risk factors for the development of CVD. With rapid economic development and increasing westernization of lifestyle in the past few decades prevalence of these diseases has reached alarming proportions among Indians in the recent years.

There is a strong linear relationship between high blood pressure (BP) levels and the risk of CVD. Though the terminology “prehypertension” (systolic blood pressure 120-139 mm Hg and/ or diastolic blood pressure 80-89 mm Hg) is known for many years, its global awareness increased tremendously after the JNC (Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure) – 7 report from the United States in 2003¹.

Individuals with prehypertension have two-fold higher risk of mortality associated with stroke and coronary artery disease when compared with normotensives (individuals with BP less than 120/80 mm Hg)². In addition, prehypertensives are at higher risk of developing hypertension and CVD in their later lives. Without lifestyle or pharmacological intervention these individuals were found to have more than two times higher risk (prehypertensive vs. normotensives - 37 vs. 17%) of progression to overt hypertension within four years of diagnosis³.

Co-existent CVD risk factors like dyslipidaemia, raised blood sugar levels and higher body weight are common among prehypertensives. About 90 per cent of Americans with prehypertension had at least one CVD risk factor above optimal levels and 68 per cent had at least one significant clinical risk

factor for heart disease or stroke⁴. Hence, individuals with prehypertension are expected to have higher cardiovascular mortality risk.

Many studies from different Indian States showed that the prevalence of prehypertension in the country is about 40-50 per cent; a prevalence much higher than that in the West. Most of these studies were population-based surveys that would be expected to include at risk individuals (*e.g.*, elderly individuals) and those with other illnesses (that might be associated with high blood pressure). There have not been any published Indian data on prevalence of the disease in an apparently healthy, relatively young adult population. A study by Ray *et al*⁵ in this issue addresses this deficiency and provides valuable insights on the burden of prehypertension and related co-morbidities among Indian military personnel.

Military personnel of a country are expected to be healthier than its native population because these individuals usually lead healthy lifestyles that include regular exercise and good nutrition, have easy access to healthcare, and are younger than the general population. However, Ray *et al* in their study found a high prevalence of prehypertension (79.8%), lipid abnormalities (about 67%) and overweight/obesity (29.9%) among Indian military subjects⁵.

Though previous population based Indian studies showed a prevalence of prehypertension of about 40-50 per cent, Ray *et al* noticed a much higher prevalence of the disease in their study population⁵. In most of these previous screening surveys to detect abnormal blood pressure, significant proportions of participants had blood pressures in the hypertensive range. For example, a population based screening survey from Kerala reported that only 11.4 per cent of study participants had BP in the normal range and

all others had either hypertension or prehypertension⁶. Because Ray *et al*⁵ excluded hypertensive individuals from their study, prevalence of prehypertension might have been over-reported in their cohort.

Lipid abnormalities especially low levels of high density lipoprotein (HDL) were observed in high proportion of their study subjects. A recent population based survey from central India also showed subnormal HDL levels in 50 per cent of the participants⁷. Mean HDL levels among males in this study were reported to be 40.86 (\pm 1.08) mg/dl. The relatively low HDL levels may be peculiar to Indian population, the significance of which should be evaluated on large scale studies to determine how it affects CVD risk.

In their study subjects, Ray *et al*⁵ noticed high cholesterol and triglyceride levels among 21.9 and 14.1 per cent respectively, though 92.1 per cent of the cohort reported moderate to heavy physical activity. Use of high fat diet (73.1% reported daily use of ghee or butter) might have been a reason for adverse lipid abnormalities in this population, but lack of adequate protection from dyslipidaemia that is expected with regular moderate to heavy physical activity is surprising. This interesting phenomenon raises new research questions in the Indian context.

Similarly, overweight/obesity seen among 29.9 per cent of this physically active, relatively young adult population is also thought provoking. Ray *et al*⁵ used a body mass index (BMI) cut-off of more than 23 kg/m² to define overweight. Abdominal obesity and visceral adiposity are the key determinants of insulin resistance, an important component of metabolic syndrome (MS) – the major CVD risk factor in all populations. Even with lower BMI, Asians have higher visceral adiposity than Caucasian populations. For this reason, the international task force of World Health Organization (WHO) has set lower cut-off BMI values for Asians to define overweight and obesity (more than 23 and 25 kg/m² respectively)⁸.

Prevalence of MS (a state of central obesity, high blood pressure, insulin resistance and dyslipidaemia) has reached epidemic proportions in India in recent years. Reported prevalence of MS in some regions of the country ranges from 23.2 to 41.1 per cent⁹. Many of the participants of the study by Ray *et al* would have had metabolic syndrome because of the high prevalence of prehypertension, overweight/obesity and adverse lipid profiles in their study cohort.

The high CVD risk of this apparently healthy adult population has important implications that should alarm the public health authorities of the country.

Though antihypertensive medications have shown to reduce mortality among prehypertensive individuals with CVD, their benefit among those without CVD is not yet clear¹⁰. High dietary salt use was reported by about 42 per cent of participants of the study by Ray *et al*⁵. Other Indian workers also reported high prevalence of prehypertension and hypertension among those who overuse salt in their diets⁶. Dietary salt restriction is well known to reduce blood pressure and prehypertensives should be encouraged to lower their dietary salt consumption.

Management of dyslipidaemia is also primarily through dietary modifications and lifestyle changes like increasing physical activity. Dietary practices of different population subgroups in India are very diverse and processed food is consumed only by a minority of the population. Major chunk of Indians cook most of their food at home and ingredients of foodstuffs are decided by themselves. Therefore, restrictions on food products to encourage the population to adopt healthy dietary practices are undesirable in the Indian context, unlike in the developed countries. Campaigns through the audio-visual media, newspapers and health magazines might be useful strategies in the country.

Prevalence of overweight and obesity are increasing in India in recent years even though undernutrition continues to be an important public health issue even in the 21st century¹¹. Despite the availability of a few therapeutic agents, the management of obesity is still mainly non-pharmacological¹². Physical activity and dietary modifications are the cornerstones of management of overweight and obesity.

Overall, encouragement of healthy lifestyles in the population should help to reduce the high burden of lifestyle diseases and MS in India. Governmental and non-governmental agencies of the country should work together to achieve this goal. Lifestyle interventions have shown definite benefit in the management and prevention of these diseases in large scale studies^{12,13}.

There is a paucity of epidemiological data on the overall prevalence of many chronic illnesses (including lifestyle diseases) in India because of the following reasons: (i) the country is huge with very diverse population that has different social

and cultural characteristics; (ii) even today, there is inadequate access to healthcare institutions for many rural communities; and (iii) reliance on indigenous healthcare systems such as Ayurveda, Unani and Siddha by many individuals of the country.

The Indian military has a fairly good representation of all communities and population subgroups of the country and hence a study on the health of military personnel would reflect the overall health status of young adult population of India. Therefore, the study by Ray *et al*⁵ should be an eye opener to the alarmingly high rates of prevalence of lifestyle diseases in India that demands urgent action.

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